California
Department of Health Services

Collection and Shipping of Biological Specimens Following a Chemical Incident or Terrorism Event

In the event of a chemical/terrorism incident, biological specimens must be collected to identify or confirm the chemicals involved. Confirmation/identification of the chemicals is important for treatment of the victims, to identify and possibly prosecute the offenders, and to begin planning for remediation of the affected environment.

These collection and shipping guidelines have been consolidated from CDC, DOT and IATA guidelines and regulations.

- **Collect from each person (CDC requirement):**

  1. **Five Tubes of Blood (Collect immediately)**

     a. Two 5 or 7 ml purple-top (EDTA) tubes. Vacuum fill only. (Do not open.)

     b. One 5 or 7 ml gray-top (fluoride) or green-top (heparin) tube. Vacuum fill only. (Do not open.)

     c. Two 10 ml red-top tubes (no anticoagulant). Do not use SST or gel tubes. Please do not separate the serum from the cells.

     d. Include in the shipment one or more empty tubes from each tube lot number. These will be used as blanks

        Blood samples should be collected at the earliest possible time and kept cool. (4^{o}C is optimal.) Ship refrigerated with ice packs. **Do Not Freeze** at any time!

        Note: Tubes are often distributed in Styrofoam racks/holders. If available, use these racks for shipping purposes.

        If a large number of samples are collected, a refrigerated case or cold storage space in a super market could be used for storage. This must be a securable (lockable) space, as called for in the evidence protection procedure (www.fbi.gov/lab/handbook).

2. **25 ml Urine (Collect 7-8 hours after exposure)**

   Use a screw-capped plastic container or other securable, cold-resistant container. Freeze as soon as possible. If possible, ship on dry ice. If dry ice is not available, samples can be shipped with freezer packs.

   Urine samples should be collected 7-8 hours after exposure and shipped frozen.

   Pack and ship the urine samples separately from the blood samples.

- **After collection:**

1. Label the specimens with appropriate information**. Please do not include <u>personal identifiers</u> on samples.**

   The label should include an unique patient identification number and other relevant information (e.g. medical records number, specimen identification number, collector's initials, and date/time of collection). This information may be useful to correlate the results obtained from a Rapid Toxic Screen with the individual from whom samples were collected.
2. Place a list of names with corresponding sample identification numbers in a zip-lock bag and place it inside the shipping container. A copy of the list should be maintained at the collection site, to facilitate matching reported results with actual victims.
3. Wrap each sample top with tamper-proof, waterproof, forensic evidence tape. Be careful not to cover the sample labels. Place collected and labeled blood samples (tops wrapped with evidence tape) back into a Styrofoam rack (to provide stability during shipment). When packaging samples, please wrap the tubes with absorbent material (i.e., blue hospital pads or newspaper) and secure with tape. Place the packaged tubes in a large zip-lock bag.
4. Package the frozen urine cups individually. Wrap each cup with an amount of absorbent material that can absorb all the liquid should a leak occur, and place in a zip-lock bag.
5. Attach a properly completed <u>Chain of Custody Form. The form will list everyone who handles the samples, from collection to final delivery.</u>

- **Shipping the Specimens**

Note: <u>For shipping purposes, these specimens are considered **Diagnostic Specimens**</u>. This is a less restrictive class than Infectious Materials. Diagnostic

Specimens are human or animal materials that have a relatively low probability of containing pathogens, and are shipped for the purpose of screening, study or diagnosis. These materials include human or animal tissue, blood, excreta, etc. Diagnostic specimens are not considered to be a hazardous material by the International Air Transport Association (IATA), although the following packaging and shipping requirements apply. Materials shipped for the purpose of identifying pathogens, or materials that are reasonably suspected to contain pathogens, should be shipped as an infectious substance. **Note:** Packages containing dry ice must be identified. The following instructions point this out.

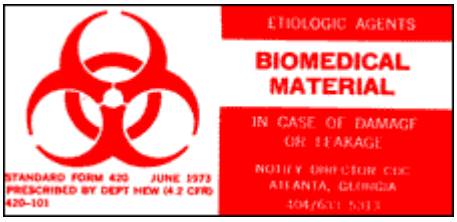
1. Packaging

   The basic triple packaging concept applies to diagnostic specimens. That is, several primary sample containers are placed in a leak-proof secondary container (a "zip-lock" bag will be acceptable). One or more secondary containers are then placed in the shipping container.

   Packaging should be specific for use with diagnostic specimens. Such packaging must comply with IATA Instruction 650. Be sure to specify if the shipment is a refrigerated sample (ice packs or dry ice/freezer packs).

   For diagnostic specimens, the maximum quantity for a primary receptacle is 500 ml or 500 g, and each shipping container must not contain more than 4 L or 4 kg.

2. Labeling



Affix the regulation label shown at left to all shipments of biological specimens.

The sender and recipient addresses must be printed and clearly displayed. If packaged with dry ice, a Class 9 diamond must be placed on one side of the outer package. If the package is shipped by air, the following text should appear on the outer container: "DIAGNOSTIC SPECIMEN PACKED IN COMPLIANCE WITH IATA PACKING INSTRUCTION 650."

The proper shipping name is: Diagnostic Substance (UN 3373)

3. Samples with Frozen Gel Pack and/or Dry Ice.
   If shipping with ice, the packaging must be leak proof. Ice or dry ice must be placed outside the secondary packaging. Interior supports must be provided to secure the secondary container as the refrigerant melts/sublimes. Dry ice is considered a miscellaneous hazard (Class 9) by IATA. If shipped by air, packages containing dry ice must be identified with an additional Class 9 label and also be marked with "Carbon dioxide, solid, UN 1845" and the net quantity of dry ice (Although the usual limit is 5.5 lbs, there is no limit for medical shipments.), e.g., Carbon dioxide, solid, UN 1845, 2 KG. Packages certified for dry ice most likely will be pre-labeled and marked.

   A Declaration for Dangerous Goods form is not required for shipments in which dry ice is the only hazardous material.

4. Packaging to keep samples cold.
   - Avoid shipping biological specimens on wet ice. Use frozen gel packs.
   - Styrofoam containers that fit properly inside a sturdy cardboard box must be used.
   - To keep samples frozen, use dry ice. Dry ice must be placed only outside the secondary packaging. Placing dry ice inside impermeable, screw cap containers may cause your shipment to explode.
   - Follow the directions in the IATA Packaging Instruction 904.
   - If temperature control is critical, pre-cool the secondary container in the freezer before adding frozen specimens, closing it, and placing the cold secondary container in dry ice.

5. Check with your shipping vendor for specifications and limitations.
   Check that the shipping vendor handles the classification type of your package (for example, UPS does not accept infectious substances). Also, individual companies have some specific requirements for shipments containing dry ice, diagnostic specimens, or infectious agents.

   Examples of some specifications/limitations of various shipping services:

   - **Federal Express**: On-line tracking at www.fedex.com, or call 1-800-GO-FEDEX.

Dry ice – a special IATA label is required, and the amount of dry ice must be listed. **Triple packaging is required for diagnostic specimen shipments**. For excellent directions, see:

www.fedex.com/us/services/packaging/diagnosticbrochure.pdf.

These packages should not be left at a drop box. Call for pick-up or bring to a FedEx truck. FedEx will accept Infectious Agent shipments, in UN 6.2 packaging, with proper labeling and documentation.

- **UPS**: On-line tracking at www.ups.com, or call 1-800-544-9964.
  Dry ice – Do Not use the international shipping label required by IATA regulations. UPS rejects packages with this label. Write "DRY ICE" on the box according to the directions in the labeling section. Diagnostic specimens must be shipped in the UPS lab pack or in certified UN 6.2 packaging**.** UPS does not accept Infectious Agent shipments.

- **Airborne Express**: On-line tracking at www.airborne.com, or call 1-800-426-2323
  Dry ice – IATA labels and 3 types of DOT marking on the package are accepted. Call the Hazardous Goods Hotline, 1-800-426-2323, ext. 2757 to request a fax explaining details. Diagnostic specimen shipments are accepted. Note: A cleanup fee of $200 per shipment will be charged if the package leaks and a lab pack is not used. Airborne Express accepts Infectious Agent shipments, in UN 6.2 packaging with proper labeling and documentation.

Any question should be directed to: Kevin Chao, Environmental Health Laboratory Branch, California Department of Health Services, at (510) 620-2889